

Article

Exterior Indicators Of The Orenburg Breed Little Goats Dependence On Sexual Differentiation During The Lactation Period Of Postembryonal Development

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Abstract: This article examines the exterior characteristics of little goats obtained from the first lambing of white Orenburg goats delivered to Nurata district from Orenburg region of the Russian Federation. In the course of the study, it was established how the exterior indicators of little goats change in the suckling period of postembryonic development depending on sexual differentiation.

Keywords: Goat Breeding, Orenburg Breed, Little Goat, Exterior, Gender Of The Animal.

1. Introduction

In developing countries, goat breeding as a livestock industry has high growth rates. One of the main reasons for this is that the network is not prone to large investments, and the risk of various diseases is at a lower level. Because goats are very resistant to different climatic conditions, they can also be cared for by people of different ages. Goat breeding plays a big role in developing countries. [1] Today, goats are valuable and necessary animals in agriculture. Currently, there are a huge number of breeds and breed groups of goats in many regions of the world. They are diverse in size and body weight, the direction of productivity, the nature of skin and wool, the external structure of animals, the complex and appearance of the structure and functioning of their internal organs and tissues, and the area of distribution[1]–[3]. The diversity of goat breeds requires their unification into various groups according to zoological and economically useful characteristics. According to zoological characteristics, goats can be divided into three main groups: Western European – dairy, downy direction of productivity and wool breeds, European and Asian – coarse-haired breeds and goats of mixed productive direction, Indo-African dairy breeds and goats of mixed productive direction[4]–[6]. According to economic characteristics, goats are divided into 4 main groups: tweed, wool, dairy and mixed productivity.

THE LITERATURE REVIEW

Goats of the downy direction of productivity are more limited in the number of heads and prevalence. The main developed area of goat breeding in the downy area of productivity is Russia, where Orenburg, Pridonskaya, Altai mountain and other specialized breeds are bred[7]–[9]. In addition to the CIS, goats of downy productivity are bred in India, Mongolia, China and Pakistan. The yield of down in goats is low, on average 150-200 g. In Orenburg goats, however, this indicator is 350-600 grams, which is not inferior in fineness of down [3].

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It is necessary to know the peculiarities of individual development in the body. Since the process of growth and development of the organism, as well as productivity in animals, are determined not only by species and breed characteristics, but also by specific individual features of the complex structure and functioning of animals, their internal organs and tissues, as well as external structure [2].

Studying an animal based on its appearance, external forms in general and the characteristics of individual parts of the body allows you to reflect on certain changes that occur with the age of the animal. To assess the characteristics of the appearance, external forms in general and the characteristics of individual body parts, measurements of external body parts can be measured. You can get more than 70 measurements from pets, but mostly their number does not exceed 10 or 20 [4].

Many biological features and productivity indicators of the Orenburg breed of downy goats imported to our country have not yet been studied. In this regard, the determination of the external characteristics of baby goats associated with sexual differentiation in the early postembryonic period acquires scientific and practical significance.

2. Materials and Methods

The research was carried out on goats of the Orenburg breed of the downy direction, bred in "Nurata Karakol Breeding" LLC in the village of Temirkauk in Nurata district of Navoiy region. At the same time, goats used were obtained from goats that gave offspring for the first time. Two groups were formed in the experiment, the first group included he-goats, and the second group included she-goats. There were collected goats at the amount of 20 pieces in one group. The measurement, which was accepted generally in animal husbandry, was used to determine the following parameters of the exterior of the goats, depending on sexual differentiation, such as: dimensions of top of shoulder, tail height, trunk slope length, chest depth, chest width, trunk circumference. A measuring rod, a measuring tape and a measuring compass (Wilkins) were used in the measurement. The sizes were obtained at the birth of goats, at the age of one month and four months (weaning). During the measurement, the young goats were taken on a flat area, in a calm position, with straight legs and a straight head. In the studies, the growth coefficients of young goats were calculated for the external parts of the body. In this case, the indicator at the end of the period is divided by the corresponding indicator at the beginning of the period to determine the growth coefficients.

The obtained numerical data were processed biometrically in a mathematical and statistical way and calculated using the appropriate formulas: average arithmetic value – \bar{X} , coefficient of variation – Cv%, the average value of arithmetic error – S_x , criterion of reliability of differentiation between groups – P [5].

3. Results

Data on the results of studies on the sexual differentiation of body size and age-related indicators of the exterior of the Orenburg goat breed are shown in Table 1. In particular, it was shown that at birth, the arithmetic value of appearance in terms of height at the top of shoulder in he-goats was 32.02 cm, which is 5.77 cm ($P < 0.01$) higher than in equal she-goats. This body part corresponded to 40.16 and 50.40 cm in he-goats aged 1 and 4 months, respectively, with a predominance of 4.88 and 2.81 cm ($P < 0.01$).

Table-1

External characteristics of young goats related to sexual differentiation, in cm

Parameters	Age, month	n-20			
		♂		♀	
		$\bar{X} \pm S_x$	Cv,%	$\bar{X} \pm S_x$	Cv,%
Top of shoulder	At the birth	32,02±0,49	6,83	26,25±0,43	7,34
	1	40,16±0,56**	6,27	35,28±0,52	6,63
	4	50,40±0,75	6,61	47,59±0,66	6,24
Body length	Tug'	33,27±0,47	6,25	27,20±0,40	6,56
	1	42,53±0,61	6,43	36,80±0,58	7,01
	4	53,65±0,84	7,02	50,15±0,76	6,77
Height of tale	At the birth	35,15±0,56	7,07	29,61±0,60	9,03
	1	44,69±0,71	7,11	37,15±0,62	7,47
	4	53,50±0,73	6,26	51,67±0,79	6,85
Chest depth	At the birth	10,80±0,19**	7,78	9,15±0,17	8,14
	1	15,35±0,26	7,59	13,25±0,23	7,69
	4	21,25±0,35	7,29	18,55±0,32	7,72
Width of the chest	At the birth	5,81±0,09	7,10	5,13±0,10	8,88
	1	8,90±0,15	7,52	7,53±0,16	9,51
	4	12,72±0,22	7,78	10,48±0,22	9,22
Measurement round neck	At the birth	5,64±0,04*	3,01	4,53±0,03	2,69
	1	6,80±0,04	2,86	5,74±0,04	3,11
	4	7,76±0,05	3,09	7,30±0,05	3,27
Pelvic width	At the birth	5,51±0,10	7,76	5,03±0,11	9,40
	1	7,97±0,12	6,98	6,90±0,12	8,01
	4	10,80±0,17	7,18	9,03±0,17	8,52

Izoh: *-P<0,05; **-P<0,01;

The arithmetic value of the length of the trunk showed that young she-goats are born with a relatively short body by 6.07 cm, or 22.32% (P<0.001), compared with he-goats equal to them, which is 27.20 cm at birth. It was also shown that over the next 1 and 4 months, this body part will be 36.80 and 50.15 cm in the corresponding sequence in she-goats, which is 4.88 and 2.81 cm (p<0.01) shorter than in he-goats.

The arithmetic value obtained around tail height at birth was 35.15 and 29.61 cm in he-goats and she-goats, respectively, with a difference of 5.54 cm (P<0.001) between he-goats dominated. In the subsequent age periods of 1 and 4 months, this indicator of the exterior also showed that young he-goats have a higher physique, 7.54 (P<0.001) and 1.83 (p>0.05) cm, respectively.

The arithmetic value of the breast depth at birth was 10.80 cm in he-goats, showing that in she-goats' breast structure is 1.65 cm (P<0.01) deeper than peer goats. This body part corresponded to 15.35 and 21.25 cm in he-goats aged 1 and 4 months, respectively, which is 2.1 and 2.7 cm (P<0.01) higher than in she-goats. Even the digital data obtained by breast width showed that he-goats differ from their peers at the level of reliable criteria. In particular, in he-goats, this arithmetic value is 5.81 cm, which indicates a wider structure by 0.68 cm (P<0.01) than in peer she-goats. He-goats were 8.90 and 12.72 cm tall in the corresponding sequence for this part of the body at the ages of 1 and 4 months, surpassing their she-goat peers by 1.37 and 2.24 cm (p<0.01).

The study of the circumference of the forelimb of ungulates makes it possible to estimate the growth rate of tubular bones in the body. The arithmetic value obtained along the circumference of the arm was 5.64 and 4.53 cm in he-goats and she-goats, respectively, with a difference of 1.11 cm (p<0.05), while the indicators of he-goats dominated. This indicator of the exterior of young goats aged 1 and 4 months was characterized by the fact that he-goats had a thicker structure by 1.06 (P<0.001) and 0.46 (P<0.01) cm, respectively.

The arithmetic value obtained around the width of the pelvis at birth was 5.51 and 5.03 cm in young he-goat and she-goats, respectively, with a difference between them of 0.48 cm ($P<0.01$), he-goats prevailed. At a later age of 1 and 4 months, the width of the pelvis also showed that he-goats have a broader value, 1.07 and 1.77 ($P<0.001$) cm, respectively.

The indicators of the exterior of Orenburg breeds, depending on sexual differentiation, were determined to be predominant in different age periods in absolute he-goats, while relatively low results were noted in peer she-goats. Comparing each part of the body by growth coefficients by gender and age section allows a more objective assessment of the exterior. Numerical data on the growth coefficients of external body sizes calculated by sex and age section during the studies are shown in Table 2.

Table-2
Growth coefficients of Capricorn body parts related to sexual differentiation

Parameters	Age	♂	♀
Top of shoulder	At the birth	1,25	1,34
	1-4	1,25	1,34
	At the birth-4	1,57	1,81
Body length	At the birth-1	1,28	1,35
	1-4	1,26	1,36
	At the birth-4	1,61	1,84
Height of tale	At the birth-1	1,27	1,25
	1-4	1,20	1,39
	At the birth-4	1,52	1,74
Chest depth	At the birth-1	1,42	1,44
	1-4	1,38	1,40
	At the birth-4	1,97	2,03
Width of the chest	At the birth-1	1,53	1,46
	1-4	1,42	1,39
	At the birth-4	2,18	2,04
Measurement round neck	At the birth-1	1,21	1,27
	1-4	1,14	1,27
	At the birth-4	1,38	1,61
Pelvic width	At the birth-1	1,45	1,37
	1-4	1,36	1,31
	At the birth-4	1,96	1,80

In particular, while in young he-goats the natural size top of the shoulder height prevailed over age periods, the intensity of growth was observed in she-goats. In particular, at the age from birth to one month period and from one to four months, the coefficient was 1.34, respectively, while in young she-goats it was 1.25. Even at the age of birth to four months, the absolute advantage was in young she-goats, which is 0.24 units more than in young he-goats with a coefficient of 1.81.

The coefficients on the length of the trunk indicate that, according to these indicators, the intensity of growth was observed in young she-goats. At the age from birth to one month and from one month up to four months, it corresponded to coefficients of 1.35 and 1.36, respectively, while in young he-goats it was 1.28 and 1.26, respectively. The total score from birth to four months was equal to coefficients of 1.61 and 1.84 for he-goats respectively and she-goats were dominant by 0.24 units.

The height coefficients at the tail show that, although the natural size of the height at the tail in young he-goats prevailed in age periods, even in this case, the intensity of growth

was observed in young she-goats. The ratio of 1.25 and 1.39, respectively, at the age from birth to one month and from one to four months, was 1.27 and 1.20 in he-goats. In the total score from birth to four months, he-goats and she-goats had odds of 1.52 and 1.74, respectively, while she-goats dominated by 0.22 units.

Breast depth and breast width have shown that body size growth coefficients decrease in both sexes steadily in the period from birth to one month and from one month to four months. In particular, young he-goats had breast depth coefficients of 1.42 and 1.38, respectively, and young she-goats had 1.44 and 1.40, respectively. As for the breast width, it was 1.53 and 1.42 for young he-goats in the above order, and 1.46 and 1.39 for young she-goats, respectively. The general calculation from birth to four months showed that young she-goats have a relatively active growth rate in terms of breast depth, and young he-goats - in terms of chest width.

An analysis of the coefficients obtained from the circumference of the palm shows that in the period from birth to the age of one month and from one month to four months, the coefficients remained at the same level in young she-goats, while in young he-goats there was a decrease. A high coefficient was also observed in young she-goats between the ages of birth and four months.

Pelvic width coefficients show that young he-goats had a predominance of the natural size of the pelvic width both by age periods and by growth coefficients. In particular, at the age of birth to one month and at the age of one to four months, it corresponded to coefficients of 1.45 and 1.96, respectively, while in young she-goats it was 1.37 and 1.31, respectively. In the total score from birth to four months, young he-goats and young she-goats had odds of 1.96 and 1.80, respectively, while young he-goats dominated by 0.16 units. This indicates a more intense increase in pelvic width in young he-goats than in young she-goats in the early postembryonic period.

4. Conclusion

From the results obtained and their comparative analysis, it can be concluded that parts of the exterior growth in young goats of different ages and sexes in the initial stages of the postembryonic period based on a certain trend. While young he-goats completely dominate the natural size of body parts, an increased intensity of the corresponding parts of the exterior is observed in young she-goats.

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